CLAIM AMENDMENTS

Claims 1-4 (Cancelled)

Claim 5 (Presently Amended) A system for establishing wirelessly a wireless infrastructure network ~~networking~~ to communicate with remote terminals, comprising:

a protocol conversion module for converting time discrete input information to information formatted for sending to remote terminals in data packets;

a router module for internally routing said data packets;

said protocol conversion module for converting the time discrete input information into an Internet Protocol base protocol;

a wireless protocol module for creating at least one wireless communication links to the remote terminals;

wherein said wireless protocol module causes each individual remote terminal to periodically exchange a dynamically generated routing table indicative of all of the then available routes to each individual one of the remote terminals within an autonomous wireless communication system;

wherein said wireless protocol module further causes one remote terminal having a then available route to at least yet another individual one of the remote terminals to be established as a primary station;

wherein said wireless protocol module still further causes all other remote terminals in said autonomous wireless communication system to be identified as secondary stations; and

wherein said wireless protocol module further causes a point to multi-point link on a single wireless channel to be created between said primary station and only those secondary stations having a then available route to at least another individual one of the secondary stations;

a wireless device interface module for providing wireless transceiver interfacing;

and

at least one transceiver for responding to said interface module for sending information wirelessly to a remote terminals via the created at least one wireless communication link.

Claim 6 (Presently Amended) A system according to claim ~~1~~ 5, wherein said ~~protocol conversion module converts the~~ time discrete input information is instrumentation time discrete information in an ~~IP *GAS1d~~ Internet protocol ~~base~~ based protocol.

Claim 7 (Cancelled)

8. (New) A method of creating a wireless network infrastructure between a plurality of remote terminals within wireless communication range of one another, comprising:

discovering wirelessly whether individual ones of the plurality of remote terminals have active communication nodes; and

creating wireless communication links with only those individual ones of the plurality of remote terminals having active communication nodes.

9. (New) A method according to claim 8, wherein said step of discovering includes:

periodically polling, over exponentially increasing periods of time, the plurality of remote terminals to discover wirelessly whether individual ones of the plurality of remote terminals previously not having active communication nodes now have active communication nodes.

10. (New) A method according to claim 9, further comprising:

creating other wireless communication links with those individual ones of the plurality of remote terminals now having active communication nodes.

11. (New) A method according to claim 8, further comprising:

requesting permission from an individual one of the remote terminals having a discovered active node permission to transmit at least one data packet of input information;

sending the at least one data packet of input information to the discovered active node; and

releasing said individual one of the remote terminals having a discovered active node to request permission from another individual one of the remote terminals having another discovered active node permission to transmit at least one data packet of input information.

12. (New) A wireless communication system, comprising:

a plurality of stations each having an independently controlled communication node for receiving and transmitting information over a single wireless communication channel with a fixed payload bandwidth;

wherein only an individual one of said plurality of stations is designated as a primary station and wherein all other individual ones of said plurality of stations are designated as secondary stations; and

a module disposed in each individual one of said plurality of stations for controlling allocation of said fixed payload bandwidth between said plurality of stations.

13. (New) A wireless communication system according to claims 12, wherein said module includes:

means for discovering wirelessly whether individual ones of the plurality of stations have active communication nodes; and

means for creating wireless communication links with only those individual ones

of the plurality of stations having active communication nodes.

14. (New) A wireless communication system according to claim 13, wherein said means for discovering includes:

means for periodically polling, over exponentially increasing periods of time, the plurality of stations to discover wirelessly whether individual ones of the plurality of stations previously not having active communication nodes now have active communication nodes.

15. (New) A wireless communication system according to claim 14, wherein said module further includes:

means for requesting permission from an individual one of the remote terminals having a discovered active node permission to transmit at least one data packet of input information;

means for sending the at least one data packet of input information to the discovered active node; and

means for releasing said individual one of the remote terminals having a discovered active node to request permission from another individual one of the remote terminals having another discovered active node permission to transmit at least one data packet of input information.

16. (New) A wireless communication system according to claim 12, wherein said module controls five functions to create reliable links between said plurality of stations.

17. (New) A wireless communication system for controlling the allocation of a fixed payload bandwidth between a plurality of remote communication nodes, comprising:

a wireless protocol module for discovering wirelessly whether individual ones of the plurality of remote communications nodes are in an active state and for creating

wireless communication links with only those individual ones of the plurality of remote communication nodes having said active state; and

said remote communication nodes not having an active state being periodically polled to discover wirelessly whether individual ones of the plurality of remote communication nodes not previously being in said active state have switched to said active state.

18. (New) In a wireless communication system according to claim 17, wherein the time period between an individual one of said remote communications nodes being polled increases exponentially in response to a determination that the remote communication node is not in said active state.

19. (New) In an autonomous wireless communication system having a plurality of communication nodes, each individual communication node being within radio range of at least one other communication node, a method of maximizing an allocated fixed payload bandwidth between said plurality of communication nodes, comprising:

prompting each individual communication node to periodically exchange a dynamically generated routing table indicative of all of the then available routes to each individual one of the communication nodes within the autonomous wireless communication system;

establishing one of the individual nodes having a then available route to at least another individual one of the communication nodes having a then available route to at least yet another individual one of the communication nodes as a primary node;

establishing all other individual ones of the communication nodes as secondary nodes; and

creating on a single wireless channel a point to multi-point link between said primary node and only those secondary nodes having a then available route to at least another individual one of the communication nodes.

20. (New) The method of maximizing an allocated fixed payload bandwidth, according to claim 19, further comprising:

establishing a system point to multi-point link between said primary node and only those secondary nodes having a then available route to at least another individual one of the communication nodes, said system point to multi-point link having a plurality of wireless channels including said single wireless channel;

wherein some individual channels may be non operational;

wherein all of said wireless channels are associated with at least the same individual communication nodes associated with the autonomous wireless communication system; and

establishing an Internet Protocol routing function for receiving at least one Internet packet of information from an individual one of said plurality of nodes and for sending the at least one Internet packet of information to another individual one of said plurality of nodes;

said Internet Protocol routing function including three distinct sets of operations:

providing each communication node with a physical interface to facilitate coupling said node to an associated set of communication hardware;

providing each communication node with at least one link handler to facilitate preparing an Internet packet for transmission via its associated physical interface and to facilitate receiving another Internet packet via its associated physical interface; and

providing each communication node with a routing function for determining which ones of the link handlers to enable for transmission of the at least one Internet packet of information.

21. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 20, further comprising:

initiating said routing function to facilitate receiving said Internet packet for transmission via an associated physical interface and to facilitate sending said Internet packet to other links when a destination address associated with said Internet packet does not correspond to a destination address of said associated physical interface.

22. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 21, wherein said routing function obeys an established set of Internet Protocol subnetting rules.

23. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 21, wherein the at least one link handler associated with an individual one of the communication nodes negotiates with any other link handlers associated with said individual one of the communication nodes for sending and receiving Internet packets of information via their associated physical interface.

24. (New) A method of maximizing an allocated fixed payload bandwidth, according to claim 23, further comprising:

initiating a link process for starting up a transmit process for each then operational channel, said link process facilitates receiving Internet packets of information from said routing function and further facilitates distributing them among the then operational channels;

said link process not controlling access to said plurality of channels.

25. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 24, further comprising:

initiating a creation process to facilitate the initialization of a set of linking parameters for the autonomous wireless communication system and to facilitate creating said transmit process for each then operational channel;

wherein the initialization of said set of linking parameters causes a current Internet Protocol address and link to be provided to said dynamically generated routing table.

26. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 25, wherein the initialization of said set of linking parameters further causes a scheduling operation to schedule an outgoing link handler for dispatching.

27. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 26, wherein said outgoing packet handler causes at least one of the Internet packets of information to be distributed for transmission via at least one of the operational channels.

28. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 25, wherein said outgoing packet handler includes a plurality of queues, said queues being prioritized to minimize delivery based on an Internet Protocol packet type of service.

29. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 28, wherein said outgoing packet handler causes a route discovery process to be initiated if there is no available operational channel.

30. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 29, wherein said plurality of channels operate a various transfer rates; and

wherein some transfer rates are equal and wherein some transfer rates are unequal.

31. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 30, wherein said transmit process controls the transmission of frame means on a single channel.

32. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 31, wherein said frame means includes a link frame and an Internet Protocol frame; and

wherein said link frame and said Internet Protocol frame both use SLIP framing wherein a first character of said frame means includes a frame identifier to distinguish between said link frame and said Internet Protocol frame.

33. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 32, wherein said link frame is a channel frame for passing data between the primary and the secondary for channel control purposes.

34. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 32, wherein said link frame controls channel access for secondary nodes only.

35. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 34, wherein each secondary node has an associated earliest time of next poll;

wherein whenever a time indication of a real time clock exceed said associated earliest time of next poll, the associated secondary node becomes eligible for receiving an invitation to transmit.

36. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 25, wherein each secondary node further has an associated polling interval;

wherein said associated polling interval when added to a current value of said real time clock provides a time value for said associated earliest time of next poll.

37. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 36, wherein each time a secondary is polled, it associated polling interval is multiplied by a number greater than one and has a small constant added.

38. (New) A method of maximizing an allocated fixed payload bandwidth, according to claim 19, wherein said dynamically generated routing table includes at least one IP destination address and an IP address of a next hop router.

39. (New) A method of maximizing an allocated fixed payload bandwidth according to claim 38, wherein said IP address of a next hop router allows a pathfinder point to multi-point protocol to associate a pathfinder link address with said at least one IP destination address by finding the link address of the next hop router

40. (New) A method of maximizing an allocated fixed payload bandwidth, according to claim 19, further comprising:

providing each individual communication node with a route to an external communication node outside of the autonomous wireless communication system.

41. (New) A dynamic wireless network system, comprising:

link process means for establishing at least one multi-access wireless cell by receiving packets from routing functions and distributing them to at least one operational channel;

forward link bandwidth means for managing the forward bandwidth allocation within each established multi-access wireless cell; and

reverse link bandwidth means for managing the reverse bandwidth allocation within each established multi-access wireless cell.

42. (New) The dynamic wireless network system according to claim 41, further comprising:

means for establishing a link level protocol to effect at least polling and poll responses; and

backup means for developing back-up and alternative routing capability between each multi-access wireless cell within the dynamic wireless network system.

43. (New) The dynamic wireless network system according to claim 32, wherein said backup means includes monitoring means for determining link integrity between each multi-access wireless cell within the dynamic wireless network system.